(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 23 March 2006 (23.03.2006)

(10) International Publication Number $WO\ 2006/030935\ A1$

(51) International Patent Classification⁷: 25/0638

F16D 25/12,

(21) International Application Number:

PCT/JP2005/017221

(22) International Filing Date:

13 September 2005 (13.09.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2004-271252

17 September 2004 (17.09.2004) JF

(71) Applicant (for all designated States except US): TOY-OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toy-ota-cho, Toyota-shi, Aichi, 4718571 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ONISHI, Hirofumi [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi, 4718571 (JP). YASUDA, Yuji [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi, 4718571 (JP).

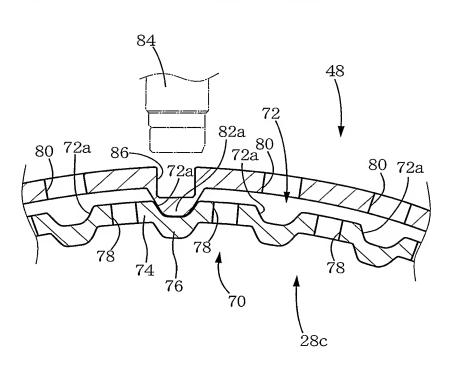
- (74) Agent: IKEDA, Haruyuki; Ikeda Patent Office, Nagoya-Dia. Bldg. No.2, 15-1 Meieki 3-chome, Nakamura-ku, Nagoya-shi, Aichi 4500002 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CLUTCH DEVICE FOR AUTOMATIC TRANSMISSION



(57) Abstract: Α clutch device (10) for an automatic transmission, comprising a clutch drum (16) supporting frictional coupling elements (12, 14), a clutch piston (18) disposed radially outwardly of the clutch drum, and a rotary speed sensor (84) disposed radially outwardly of the clutch piston to detect a rotating speed of the clutch piston, wherein the clutch piston has an inner spline (82) for engagement with an outer spline (72) of the clutch drum to prevent relative rotation between the clutch piston and the clutch drum, and further has a plurality of recesses (86) formed in an outer circumferential surface thereof and corresponding to respective teeth of the inner spline (82), and a plurality of oil holes (80) formed therethrough at an axial position of the clutch device at which the rotary speed sensor is

located, the recesses (86) and the oil holes (80) being equally spaced apart from each other in a circumferential direction of the clutch piston, and cooperating to provide a sensed portion to be sensed by the rotary speed sensor.